

2016 Learning Objectives

Invasive Species: A Challenge to the Environment, Economy and Society

Invasive species pose a serious threat to the stability of many North American ecosystems. Invasive species have been known to disrupt food webs, damage or destroy habitat and contribute to the decline of indigenous species at risk. In addition to their environmental impact, invasive species can have a significant impact on local economies; in the United States alone it is estimated that invading alien species cause major environmental damage and loss adding up to almost \$120 billion per year (Pimentel, Zuniga, Morrison – 2005).

The 19^{th} and 20^{th} centuries have seen an exponential increase in the number of invasive species being intentionally and unintentionally introduced to North America and around the world through a variety of methods. The vast majority of

invasive species that have established themselves in North America did so through unnatural or "human-assisted" means, including being introduced by early settlers for agricultural purposes. However, many others have been inadvertently transported to North America through trade and travel, as stowaways on ships or in packaging materials, and through horticulture. With the expected increases in exports and trade in the future, we can likely expect greater challenges and introductions of new species not yet known to occur in North America.

Students will learn about invasive species prevention, introduction, impact and management.

KEY TOPICS

- 1. Invasive Species and Their Impacts
- 2. Pathways of Introduction and Spread
- The Invasive Species Management cycle (Prevent, Detect, Respond, control)
- 4. Roles and Responsibilities (Government, Non-Government, the Individual)
- Tools in the Toolbox (Models, Detection Tools, Monitoring Tools, communications)

LEARNING OBJECTIVES

- 1. Explain what an invasive species is.
- Describe the economic, social, and environmental impacts of invasive species.
- Comprehend the effects/impacts of invasive species on aquatic, forest, wildlife and soil ecosystems with specific reference to biodiversity.
- 4. Explain how ecological impacts may vary by species.
- 5. Compare theories about the characteristics that assist invasive species in successfully establishing new populations. What makes a good invader?
- 6. Describe the pathways through which invasive species are introduced.

- 7. Discuss the stages of the invasive species management cycle and components of an invasive species management plan.
- Assess the costs associated with controlling an invasive species on a state/province-wide basis.
- 9. Outline methods of controlling an invasive species.
- Understand how various levels of government and other organizations are involved in the management of invasive species.
- 11. Are all invasive species created equal? Describe how risk is assessed.
- 12. Discuss the means by which invasive species are detected and monitored and have a basic knowledge of models and tools used to monitor invasive species.
- Demonstrate knowledge of the policies/legislation involved in preventing, detecting, monitoring, and controlling invasive species.
- 14. Describe the role for non-government and the average citizen in managing invasive species.
- Investigate ways to reduce the arrival of new invasive species by setting the foundations for environmentally ethical behaviors and sound environmental decision making.
- Demonstrate knowledge of the various forms of outreach and education being used and assess their effectiveness.







